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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/808,312 | 03/14/2001 | Sabine Deligne | YOR20010010US1 | 3073 |

35195 7590 02/12/2004

FERENCE & ASSOCIATES
400 BROAD STREET
PITTSBURGH, PA 15143

EXAMINER

LEWIS, MICHAEL A

| ART UNIT | PAPER NUMBER |
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2655

DATE MAILED: 02/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/808,312

Applicant(s)

DELIGNE ET AL.

Examiner

Lewis A Michael

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 - 7, 9 - 15 and 17 is/are rejected.
- 7) ☒ Claim(s) 8 and 16 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 03. 6) ☐ Other: ____

DETAILED ACTION

Claim Objections

1. Claims 8 & 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1,2,3,4,9,10,11,12 & 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Weinstein et al. (U.S. Patent 5539832).

Regarding claims 1 & 9, Weinstein et al. disclose an apparatus, program and method for compensating for interference in speech recognition system comprising of a first input medium which obtains an initial speech signal, a second input medium which obtains at least one interfering signal, a normalizing arrangement [Adaptive reconstruction filter with processor] (Fig 1) which

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reconciles the initial speech signal and at least one interfering signal with one another to produce a final speech signal and the normalizing arrangement being adapted to account for non-stationary noise in at least one interfering signal (Col 5, 26 – 39).

Regarding claims 2 & 10, Weinstein et al. disclose a first input medium is adapted to obtain the initial speech signal in an environment where noise corresponding to at least one interfering signal is present. Weinstein et al. describes that the first signal detects the speech signal with some noise and the second signal, the interfering signal, consist of noise and some speech signal where the coupling of the signals are due to the unknown acoustic room environment (Col 5, 26 - 29).

Regarding claims 3 & 11, Weinstein et al. disclose that the second input medium is adapted to obtain solely that at least one interfering signal. Weinstein et al. disclose that the second signal can be another speaker (Col 5, Line 32).

Regarding claim 4 & 12, Weinstein et al. disclose that the final speech signal is a clean speech signal. Weinstein et al. disclose that the processor of the invention is responsible for reconstructing the desired speech signal “ without the interfering signal ” which implies a clean speech signal (Col 5, Line 30 – 31).

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Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 5 & 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weinstein et al. (U.S. Patent 5539832) in view of Beierle (U.S. Patent 5309378).

Regarding claims 5 & 13, Weinstein et al. disclose an apparatus for compensating for interference in speech recognition system comprising of a first input medium which obtains an initial speech signal, a second input medium which obtains at least one interfering signal, a normalizing arrangement [Adaptive reconstruction filter with processor] (Fig 1) which reconciles the initial speech signal and at least one interfering signal with one another to produce a final speech signal and the normalizing arrangement being adapted to account

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for non-stationary noise in at least one interfering signal (Col 5, 26 – 39).

Weinstein et al. do not disclose a normalizing arrangement adapted to estimate at least one characteristic from the reference signals given at least one characteristic of the initial speech signal. However, Beierle teaches a signal conditioning device that amplifies, samples and digitizes the signal characteristics of the reference (interfering signal) as well as the speech signal (Fig. 1(30)). The extraction of signal characteristics of the reference and signal is beneficial to some signal enhancement algorithms that perform continuous realtime noise cancellation.

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify Weinstein et al. by the utilization of characteristics of both the reference and signal as taught by Beierle since it is would have been beneficial for noise cancellation in speech signals.

6. Claims 6 & 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weinstein et al. (U.S. Patent 5539832) in view of Beierle (U.S. Patent 5309378) and further in view of Sonmez et al. (U.S. Patent 5745872).

Regarding claims 6 & 14, the modified Weinstein et al. disclose an apparatus/method for compensating for interference in speech recognition system. In addition, a signal-conditioning device is also presented that processes the signal characteristics. However, the modified Weinstein et al. do not disclose

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that the normalizing arrangement is adapted to refer to a codebook in estimating the signal characteristics. However, Sonmez et al. teach the use of codebooks to refer to signal characteristic for use in a normalizing arrangement (Title, Fig. 1). Codebook vectors are advantageous means of classifying speech features such as the spectra information. It is also good for classifying both static and dynamic features in a noisy environment and is an asset in boosting speech recognition performance.

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify the modified Weinstein et al. by the utilization of codebooks to refer the features of the reference signal as taught by Beierle since it is would benefited the normalizing arrangement resulting in improved speech recognition.

7. Claims 7 & 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weinstein et al. (U.S. Patent 5539832) in view of Beierle (U.S. Patent 5309378) and Sonmez et al. (U.S. Patent 5745872) and further in view of Ammar et al. (Seventh National Radio Science Conference).

Regarding claims 7 & 15, the modified Weinstein et al. disclose an apparatus/method for compensating for interference in speech recognition system. In addition, a signal-conditioning device is also presented that processes the signal characteristics. The modified Weinstein et al. also disclose that the

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normalizing arrangement is adapted to refer to a codebook in estimating the signal characteristics. However, the modified Weinstein et al. do not disclose that the normalizing arrangement applies a compensation term to the initial speech. However, Ammar et al. disclose the use of a feedback compensation term to enhance the initial speech (Fig. 1). Many algorithms in speech enhancement use feedback compensation on the initial speech as a means of adaptively canceling interference signals.

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify the modified Weinstein et al. by the use of a compensation term on the initial speech as taught by Ammar et al. since it is enhanced the initial speech resulting in improved speech recognition

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lewis A Michael whose telephone number is 703 505-8730. The examiner can normally be reached Monday through Friday, 8:30 am – 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, To Doris can be reached on (703)305-4827. The fax

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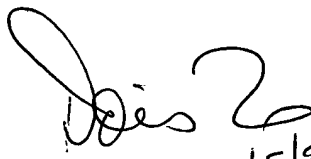
phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lewis A Michael
Examiner
Art Unit 2655

mal

1/29/2003


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